

May 14, 2007

The Honorable Kevin J. Martin  
Chairman  
The Honorable Michael J. Copps, Commissioner  
The Honorable Jonathan S. Adelstein, Commissioner  
The Honorable Deborah Taylor Tate, Commissioner  
The Honorable Robert M. McDowell, Commissioner  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

Dear Chairman Martin,

This letter is in response to the Commission's recent Broadband Deployment Notice of Inquiry released April 16, 2007 (FCC 07-21).

On behalf of the Metropolitan Washington Council of Governments (COG), of which I am a board member, I want to thank the FCC for continuing to solicit feedback from the public regarding how the Commission is meeting its obligation "to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies".

COG is a regional organization of Washington area local governments. COG is composed of 21 local governments surrounding our nation's capital, plus area members of the Maryland and Virginia legislatures, the U.S. Senate, and the U.S. House of Representatives. COG provides a focus for action and develops sound regional responses to such issues as the environment, affordable housing, economic development, health and family concerns, human services, population growth, public safety, and transportation.

In January 2006, the COG board established the Broadband Access Task Force (BATF), an effort that culminated in a report to the COG Board of Directors in April, 2007. The Board tasked me to be the Chairperson of this effort.

The BATF's mission was to strengthen the region's economy and transform its communities by fostering the development of broadband internet access throughout the National Capital Region, as a key feature of common public infrastructure. Our final report contained a survey of COG member governments as to their attitudes toward municipal broadband and

the state of broadband in their jurisdictions. The report also contained recommendations for member governments to consider when planning, deploying or enticing the private sector to deploy broadband.

The metropolitan Washington region is diverse along many lines. We have a wide variety of income levels, population densities and geographic features, making broadband availability mixed. Some of our residents enjoy fiber right to their doorstep; others must be satisfied with dialup. Asymmetric DSL and Cable are available options in most of the region.

The FCC's inquiry seeks to answer questions about advanced telecommunications capability, how it is measured and so forth. In its 16-month effort, the BATF found that a lack of available local data was one of the key issues jurisdictions face when trying to determine a course of action. Citizens want to know what their governments are doing to make sure they have all the opportunities they need to be competitive with the rest of the world. Governments have a hard time determining what the problem is, if there is one, and where it is.

We feel that the FCC should release data about broadband availability to state and local jurisdictions so that those jurisdictions can understand where there are gaps within their borders. There are also issues with how the data are gathered; these have been mentioned and elaborated on by others.

In addition to making data more available, we feel that competition of any kind is the key to advancement in telecommunications capability. This includes competition by local government. To the extent it is able, we urge the FCC to help remove obstacles to local government involvement in broadband access.

The rest of this letter details some of our recommendations regarding the specific questions raised by the FCC's inquiry.

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#### **A. What Is "Advanced Telecommunications Capability"?**

In order to provide the best opportunities to all Americans, we need to think in terms of true goal-setting, not in terms of setting a reasonable threshold for carriers to be measured against. The essence of Section 706 of the Telecommunications Act, in our view, is for the FCC to strive to make available the best telecommunications technologies to as many people in the US as possible.

Others have written about the benefits of high-speed access to the Internet; we take those arguments as largely settled. We feel that the FCC should do whatever it can to measure the state of broadband in the US not by an arbitrary speed but by the services enjoyed by other industrialized nations: our competitors and partners in the global marketplace.

There are a few measures of capability globally that could be used to assess the extent to which the US is competitive in terms of telecommunications capability. They fall into the following categories:

- Adoption/take rates
- Availability
- Cost
- Speed of access

We feel that all four measurements are valuable and should be used to determine how well we are doing compared to the rest of the world. These data should be categorized as to whether they relate to residential or business, and also by density (e.g.: urban, suburban and rural). We think that the studies conducted by the Organisation for Economic Cooperation and Development (OECD) and the International Telecommunications Union (ITU) represent reasonably good ways to get global data.

The FCC does not necessarily have a role in obtaining information in all these areas. However, we feel it is an appropriate role for the FCC to enhance its data collection efforts in three of them: availability, cost and speed of access. Each of these influences the ability of Americans to take advantage of advanced telecommunications services. First, the services need to be available. Second, they must be affordable. Finally, they must be sufficiently advanced – measured in this case by speed or bandwidth – to ensure Americans are able to consume the content that they want now and in the future.

The FCC has, to date, reported more or less in a way that indicates whether capability is available or not: specifically, the raw number of lines in a geographic area. This reflects circuit-switched thinking rather than packet-switched. We feel that the FCC should be using a measure such as “Bandwidth per Inhabitant”, used by the ITU in its Digital Opportunity Index. In other words, we feel that Americans should know the capacity of the infrastructure being provided in an area as well as whether or not it exists. Form 477 collects this information in terms of “speed tiers”, but the data are not reported.

The FCC should set an updateable goal based on the top 20 or so nations in the world ranked by this statistic. We want the US to be #1, but another option would be to be at or above the average Bandwidth per Inhabitant of the top 20 countries; current data suggest that that number may be in the range of 5-10Mbps.

Other measurements could include:

- Lowest cost broadband option; speed of option; percentage of coverage
- Fastest broadband speed option; cost of option; percentage of coverage
- Most available broadband option; cost of option; speed of option

Most importantly, we agree with the GAO that the FCC should use other boundaries than zip codes when determining coverage.

#### **B. Is Advanced Telecommunications Capability Being Deployed to All Americans?**

Based on the findings of our Metropolitan Washington Regional Broadband Survey, as well as discussions with our member governments, a lack of local data about broadband availability has resulted in a lack of knowledge regarding how well jurisdictions are being served. The consensus seems to be that broadband as currently defined is widely available. However, our members agree that they need greater capability to determine gaps.

#### **C. Is Deployment Reasonable and Timely?**

We feel that the rollout of advanced telecommunications services is occurring more or less at the same rate in this region as the rest of the country. The issue here is less with the schedule than it is with the level of service being provided, and the geographic spread of rollout. Since we have a high degree of diversity with regard to population density in this region, some of our members receive advanced telecommunications capability much earlier than others. In addition, the choices available to citizens throughout the region are not balanced: some residents are limited to dialup or satellite options, while others enjoy FTTH service.

#### **D. What Actions Can Accelerate Deployment?**

We agree with the spirit of the 1934 Communications Act that created the FCC, in which creating a competitive marketplace was the primary mechanism for “mak[ing] available...to all the people of the United States,

without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable rates...". In that spirit we have highlighted competition as the primary way to accomplish greater advanced telecommunications capability for our region. For us, this means allowing municipalities to enter the marketplace as a competitor. In many cases, our members have chosen to partner with the private sector to pilot services within their jurisdictions. However, we feel that local governments should have the right to provide services that are not being deployed by the private sector in a timely fashion, or are being deployed at a level below what the jurisdiction feels is necessary for it to provide the opportunities to its residents that it desires.

#### **E. What Are Patterns of Consumer Adoption and Usage of Services Utilizing Advanced Telecommunications Capability?**

Our member governments are increasingly using the Internet to deliver services to residents. This gives greater urgency to ensuring that all residents have adequate access. Some services, such as Web-casting meetings of legislatures, require broadband speeds to be usable. We feel that these types of services will be increasing in availability and use over time. Generally speaking, applications drive network usage, and local government is in an excellent position to provide "killer apps". In particular, providing ways to transact business with local government where a personal visit is not necessary continues to drive traffic to our members' websites. We are also increasingly using telecommunications services to connect with residents, such as through public alerting systems that send messages to cell phones and email accounts. The next logical step will be for two-way communications opportunities, perhaps through remote polling, electronic voting, allowing citizens to alert government more easily to problems in their community and other as yet unforeseen applications.

Another key driver for this region is telework. Our region is also committed to increasing the amount of telecommuting in order to decrease traffic congestion and improve air quality. As one of the most congested regions in the country, this could have a significant impact on quality of life, the environment and transportation infrastructure. We can't get there without broadband. Until the experience of working from home closely approximates being at the office, supervisors and the employees themselves will be slow to adopt the practice.

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I have attached the BATF report to this letter for your information. I hope this process will guide the FCC to greater participation with local government to keep the US competitive in the global marketplace.

Sincerely,

Supervisor Lori L. Waters  
Loudoun County Board of Supervisors

Encl.: Final Report of Broadband Access Task Force

Report of the Broadband Access Task  
Force to the Metropolitan Washington  
Council of Governments Board of Directors

Metropolitan Washington Council of Governments  
777 North Capitol Street NE  
Washington, DC 20002



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*Philadelphia, San Francisco, Minneapolis, Portland, Chicago and many other cities are participants in a great experiment.*

“Wi-Pie in the sky?”

Economist, March 11, 2006, Technology Quarterly, p. 24

## Introduction

In May 2000, the Metropolitan Washington Council of Governments (COG) board established a Digital Divide Task Force (DDTF). The group was instructed “to examine technology access issues in the Washington metropolitan region and identify ways COG area local governments can further enhance access and use of technology by area residents and businesses, regardless of location within the region, race, income or other socioeconomic factors.” (Digital Divide Task Force, iii) The DDTF found that although the digital divide was narrowing, disparities still existed<sup>1</sup>.

In January 2006, the COG board established a new group called the Broadband Access Task Force (BATF). Though similar, the BATF mission was different than that of the DDTF:

The mission of the Broadband Access Task Force is to strengthen the region’s economy and transform its communities by fostering the development of broadband internet access throughout the National Capital Region, as a key feature of common public infrastructure. Building upon the 2002 report and recommendations of COG’s Digital Divide Task Force, the new effort will identify and promote local and regional broadband access initiatives to help residents, businesses, schools, public agencies and community organizations make effective use of this technology to achieve their program management, telework, telemedicine, education, and service

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<sup>1</sup> For the main findings of the Digital Divide Task Force, see Appendix A

delivery goals while providing a greater experience for visitors to the region. (see **Appendix A**)

Whereas the DDTF looked at the digital divide as a whole (including access to computers and the Internet), the BATF focused exclusively on broadband Internet access.

Much has changed in the five years between the final report from the DDTF and the work being done by the BATF. In particular, the level of broadband access has improved dramatically, as has the degree of sophistication among local governments regarding their role in both providing access to citizens and in using broadband technologies to achieve their jurisdictional goals. The focus has shifted from bridging the digital divide to strategically using technology to do the work of government.

In this report, we will describe this shift and what it means for COG members.

### **State of the Divide**

Statistics regarding access to the Internet are relatively easy to obtain but difficult to interpret. Disparities between studies caused by different methodologies and foci cloud the true picture. In this section we will outline some of the different ways in which access to broadband is calculated. One key distinction we make, following the attitude of the recent report by the

U.S. Government Accountability Office (GAO), is between “availability” and “adoption” of broadband<sup>2</sup>. (GAO, May 2006, 3)

Although many surveys and studies of broadband availability and adoption exist, we primarily use the reports by the GAO<sup>3</sup>, FCC<sup>4</sup> and the Pew Internet and American Life Project<sup>5</sup>. These appear to be the most frequently cited sources as well as being recent and relatively free of bias. The FCC study focuses exclusively on broadband availability while the Pew study focuses on broadband adoption. The GAO study looks at both availability and adoption.

#### Households vs. Individuals

One distinction between reports is the use of household data versus individual data. The FCC and GAO reports use household data, whereas the Pew study uses data for individual adults. However, news articles use the words “households” and “individuals” or “people” interchangeably when citing reports. This makes it confusing for readers trying to understand how much broadband exists.

#### Methodologies

Differences in methodology are a primary source of contention between the GAO and FCC studies. The FCC uses survey data from “facilities-based

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<sup>2</sup> “Availability” refers to the level of deployment of broadband in a given area, while “adoption” refers to the level of subscription to broadband services by consumers. This report sometimes uses “access” and “deployment” as synonyms for “availability”.

<sup>3</sup> “Broadband Deployment Is Extensive throughout the United States, but It Is Difficult to Assess the Extent of Deployment Gaps in Rural Areas.” May 2006.

<sup>4</sup> “High-Speed Services for Internet Access.” April 2006.

<sup>5</sup> Horrigan, 28 May 2006.

providers<sup>6</sup> of high-speed connections to end users” (FCC, April 2006, 1) that it requires those providers to report every six months. Those providers must list the zip codes in which they serve at least one customer. (ibid, 3-4) The FCC then counts those zip codes as having broadband access, and in its report states that: “99% of the country’s population lives in the 98% of Zip Codes where a provider reports having at least one high-speed service subscriber.” (ibid, 4) This statistic has been widely quoted as an indication of high broadband availability in the US.

In its report, the GAO states that: “Based on our analysis, we believe that the use of subscriber indicators at the zip-code level to imply availability, or deployment, may overstate terrestrially based deployment.” (GAO, May 2006, 17) The primary argument against zip code data is that zip codes can encompass a large geographic area, potentially containing a large number of people with varying degrees of population density. If a provider has one subscriber in such a zip code, the FCC would count that zip code as “covered” even if 99% of the inhabitants did not have access at all. Other technical reasons also underlie the GAO’s assertion.

Much of the FCC’s findings involve counting high-speed lines in the US. Other similar studies refer to number of lines or subscribers per 100

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<sup>6</sup> From FCC, April 2006, 1, note 4: “For reporting purposes, an entity is a “facilities-based” provider of high-speed connections if it owns the portion of the physical ‘local loop’ or other facility that terminates at the end user location, if it obtains unbundled network elements (UNEs), special access lines, and other leased facilities that terminate at end user locations and equips them to operate as high-speed connections, or if it uses spectrum on a licensed or unlicensed basis to terminate high-speed connections at end user locations.”

inhabitants. These statistics can be misleading because they rarely have a point of reference, especially with regard to scale or level of density. In other words, where the lines are located is as or more important than how many lines there are.

A methodological difference between all three studies is the source (or sources) of survey data. The FCC surveyed broadband providers, the Pew study surveyed households and the GAO used a combination of household and provider data. The GAO purchased phone survey data from Knowledge Networks/SRI<sup>7</sup>, gathered from 1,500 households between February and April 2005. The Pew project commissioned two surveys from Princeton Survey Research Associates International<sup>8</sup>, of 3,011 and 4,001 people over the age of 18 respectively. The first survey was conducted between November and December 2005, and the second between February and April 2006. The FCC used its own report form<sup>9</sup> to gather data for its study.

### Combined Findings

After comparing the results from these three studies of broadband availability and adoption, some key statistics can be ascertained (emphasis added to show distinctions):

- “As of March 2006, 42% of all American *adults* had a high-speed internet connection at home.” (Horrigan, i)
- “...in 2005, about 30 million American *households* - or 28 percent - *subscribed* to broadband...” (GAO, May 2006, 10)

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<sup>7</sup> <http://www.knowledgenetworks.com/sri/index.html>

<sup>8</sup> <http://www.psrai.com/>

<sup>9</sup> This report is called Form 477. See <http://www.fcc.gov/broadband/data.html>.

- “99% of the country’s population lives in the 98% of Zip Codes where a provider reports having at least one high-speed service *subscriber*.” (FCC, April 2006, 4)
- The GAO found that, after making adjustments to FCC data, about 9% of households had no broadband provider rather than the 1% suggested by the FCC. (GAO, May 2006, 18)
- 73% of Americans have Internet access at home of some kind (whether broadband or not). (Horrigan, i)

### Growth in Broadband

All three studies agree that broadband availability and/or adoption has increased. The GAO report does not cite specific statistics, but acknowledges:

The availability of broadband to residential consumers has grown from its nascent beginnings in the latter part of the 1990s to broad coverage throughout the country. In the last 10 years, providers in traditional communications industry segments—telephone and cable—have upgraded and redesigned miles of their networks in order to offer broadband services. The provision of broadband through various wireless means, as well as over the existing electricity infrastructure, have also been developed, and for many, if not most Americans, the burgeoning broadband marketplace is characterized by competitive choice in broadband access and creative and ever-expanding applications and content. (GAO, May 2006, 37-38)

The FCC and Pew studies looked at trends over time as well as current data. Some of those findings included:

- The FCC found that the percentage of zip codes having zero high speed lines in service decreased by 95% between December 1999 and June 2005<sup>10</sup>.
- Home broadband adoption increased 40% between March 2005 and March 2006. (Horrigan, i)
- “Broadband adoption grew by 68% since March 2005 among people living in households with incomes between \$40,000 and \$50,000 per year.” (ibid)

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<sup>10</sup> Calculated from FCC, April 2006, Table 15.



- “Broadband adoption among African Americans increased by 121% between 2005 and 2006.” (ibid)
- Furthermore, the rate of growth is also growing. According to Pew, adoption increased 40% between 2005 and 2006, whereas it had grown only 20% between 2004 and 2005. (ibid, 1)
- “Lines connecting homes and businesses to the Internet at transmission speeds that exceed 200 kbps in *both* directions increased from 28.9 million lines to 37.7 million lines during the first half of 2005.” (FCC, April 2006, 3)

### Reasons for Broadband Unavailability

All three studies agree that certain factors have more impact than others in determining the availability and adoption of broadband. In particular, a strong correlation exists between population density and broadband availability. Rural areas of the US tend to have lower broadband availability than other areas. More specifically:

- “...high-speed subscribers were reported to be present in 99% of the most densely populated Zip Codes and in 84% of Zip Codes with the lowest population densities.” (FCC, April 2006, 4)
- “Seventeen percent of rural households subscribe to broadband service, while 28 percent of suburban and 29 percent of urban households subscribe to broadband service.” (GAO, May 2006, 12)
- The Pew study found that 44% of urban, 46% of suburban and 25% of rural households used broadband. (Horrigan, 3)

The GAO and Pew studies looked at demographic data of households to determine relationships to broadband availability and adoption. Three key “traditional” factors – income, race and level of education – do seem to continue to be correlated with broadband adoption. The Pew study found that traditionally disadvantaged groups (non-White, low-income and below a high

school level of education) still have lower rates of broadband adoption than their counterparts. However, according to Pew those groups are growing faster in their adoption of broadband than others. (ibid) Household income appears to be less of a factor than in the past in terms of broadband availability, although the GAO found that “areas with higher per-capita income are more likely to receive broadband service than are areas with lower per-capita income.” (GAO, May 2006, 21) Similarly, “In the top one-tenth of Zip Codes ranked by median household income, high-speed subscribers are reported in 99% of Zip Codes. By contrast, high-speed subscribers are reported in 88% of Zip Codes with the lowest median household income...” (FCC, April 2006, 4)

Both household income and population density point to the same two key reasons that cause broadband providers to choose whether or not to invest in a particular area: cost and demand. Providers tend not to invest in areas where they believe that their costs outweigh the revenues they will receive over time. This occurs either due to extremely high costs or low demand. Predictably, then, a business will choose to deploy broadband service where it expects a decent return on its investment.

Interestingly, lack of incumbent development activity has led to new entrants into potential broadband markets. (GAO, May 2006, 20-21) In this scenario, existing telephone and cable providers do not offer broadband in an area, which causes a new company to enter the market and offer services in

order to obtain large market share quickly. In turn, this can cause the incumbents to begin offering broadband services, often at lower rates to stave off the new competition. As a result, customers win.

The questions that presented themselves to the DDTF in 2001 therefore confront us: Is there a digital divide? If there is, how big is it, and where is it? Or, is it possible that the market is taking care of the problem? The answers to these questions are unlikely to be found anytime soon, and in any case the data necessary to answer them change on a frequent basis.

The answers, however, may be less important than an understanding of what actions can drive broadband deployment by the private sector and broadband adoption by citizens. There is evidence that local government action has had a positive impact on broadband deployment. For example, the GAO found that: “The ability of a company to access local rights-of-way, telephone and electric poles, and wireless-tower sites can influence the deployment of broadband service.” (ibid, 25) These types of resources are under local control, and the governments responsible can use them both to make deployment less costly and to help ensure full and equitable availability for citizens. Franchise agreements for cable and other video services are also tools that can be used by local governments to control the level of broadband deployment within their jurisdictions.

#### International Competition

Many groups have written recently about the relative competitiveness of the US and the rest of the world when it comes to broadband deployment. A lot of attention has been paid to recent studies by the International Telecommunications Union<sup>11</sup> (ITU) and the Organisation for Economic Co-operation and Development<sup>12</sup> (OECD), both of which rank the US fairly low compared with other countries. The OECD ranked the US 12<sup>th</sup> in number of broadband subscribers per 100 inhabitants, and the ITU ranked the US 16<sup>th</sup> in broadband penetration.

This has caused groups like the Communications Workers of America, the AFL-CIO, the Consumer Federation of America and others to advocate strongly for federal action<sup>13</sup>. In particular, groups call for official broadband policy at the federal level and a re-definition of broadband with a higher minimum speed<sup>14</sup> among other actions. This new twist in the digital divide argument is becoming a new driver for municipal broadband efforts, as communities realize that they are competing with other countries as well as the county next door.

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<sup>11</sup> ITU, Economies by broadband penetration, 2005.

Retrieved from <[http://www.itu.int/ITU-D/ict/statistics/at\\_glance/top20\\_broad\\_2005.html](http://www.itu.int/ITU-D/ict/statistics/at_glance/top20_broad_2005.html)> 10/21/2006

<sup>12</sup> OECD Broadband Statistics to June 2006.

Retrieved from <<http://www.oecd.org/sti/ict/broadband>> 10/21/2006

<sup>13</sup> See Turner and “Speed Matters” for some of these arguments.

<sup>14</sup> The FCC defines broadband as: “...services that provide the subscriber with transmissions at a speed in excess of 200 kilobits per second (kbps) in at least one direction. ‘Advanced services,’ which provide the subscriber with transmission speeds in excess of 200 kbps in each direction, are a subset of high-speed services.” (FCC, April 2006, 1) Note that “high-speed” and “broadband” are synonymous in this context.

## **Broadband Access Task Force Recommendations**

Based on the findings outlined in this report and on the experience of its members, the BATF makes the following recommendations to the COG Board of Directors. Our recommendations are categorized as “Regional”, “Local” and “National”.

### **REGIONAL RECOMMENDATIONS**

#### **1. Set Regional Goals for Broadband Availability and Adoption**

COG members should agree to a set of goals for the level of broadband deployment, regardless of whether it is provided by municipalities or not. The goals should include some or all of the following:

- *1 Gigabit to Every Household by 2015*

It is important for this region to set a high benchmark for itself in terms of available bandwidth. To that end, we recommend a goal of 1 gigabit per second (1 Gbps) or greater to every resident and business in the region. Technology makes this goal eminently feasible; all we need is the will to accomplish it. Gigabit speed matters as new, more robust applications such as telemedicine, remote education, multi-channel video and others are made available. The network should never be a barrier for any application that any jurisdiction wants to deploy.

- *Affordable Broadband for All*

Regardless of the mechanism or technology, this region should assume a strong stance on broadband availability. As a possible model, the Task Force recommends the adoption of Seattle’s “2015: Broadband For All” goal statement (see Appendix G).

- *Regional Asset Map*

In order to understand the state of broadband availability and measure progress toward stated goals, an asset map of broadband technologies deployed throughout the region is essential. Tying in to other recommendations for FCC data dissemination and the creation of local broadband offices, a coordinated effort should take place to gather the right data and make it available while honoring reasonable security and privacy rights of the private sector.

## **2. Regional Broadband Advisory Board**

A difficulty faced by any effort investigating and recommending strategies for municipal broadband is a relative lack of consistent, complete and useful data. Existing studies, reports and surveys suffer from bias and the same lack of complete information. A Regional Broadband Advisory Board – housed at COG, and made up of subject matter experts from the government, nonprofit,

education and private sectors – would be tasked with an ongoing survey of broadband availability, options and models as well as adoption within the metropolitan Washington region, and report to the members on a regular basis. The group’s work could be used to inform regional and intra-jurisdiction work on broadband development as well as being a mechanism for monitoring private sector franchise agreements. This group would make recommendations to local legislatures for broadband-related policy. This group is a resource and advocate, a point of collaboration, not a group that will make decisions on behalf of the region.

**3. Investigate the Possibility of Leveraging Existing Regional Infrastructure for Public Use**

There are regional or multi-jurisdictional telecommunications assets that could be leveraged for public use. For example, the Mid-Atlantic Crossroads<sup>15</sup> is a consortium of universities, federal government agencies and nonprofits that collectively own a high-capacity fiber network in the region. It is possible that the group might be interested in exploring making part of the network available for public access projects in cooperation with local governments. In addition, many COG members have deployed fiber networks for their own use, some of which are being interconnected and might be employed for public access as well. Some other

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<sup>15</sup> <http://wiki.maxgigapop.net/twiki/bin/view/MAX/WebHome>

examples include: access to rights of way; access to STARS towers; ability to attach to existing state or federally owned structures with appropriate security measures; leveraging franchise agreements and existing fiber networks.

## LOCAL RECOMMENDATIONS

### 1. Set Local Goals for Broadband Availability and Adoption

The BATF recommends that COG members adopt a baseline of broadband policy within their jurisdictions. This baseline may include some or all of the following:

- *Creation of Office of Broadband*

Each jurisdiction should create at least one position devoted to setting broadband policy. This has been done recently in the Commonwealth of Virginia<sup>16</sup>. An office of this kind needs to be adequately funded and given proper authority.

- *Adoption of Broadband by Citizens*

Members should also set goals for adoption of broadband by citizens, in the spirit of “No Child Left Offline” in Kentucky<sup>17</sup>.

In our view, government should be at the forefront of providing service applications online. The more applications there are, the more ways people can interact with their government through the Internet, the more they will adopt

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<sup>16</sup> See Appendix D.

<sup>17</sup> <http://www.connectkentucky.org/projects/nclo/>



higher access speeds. Members should also look into local digital inclusion efforts and partner where appropriate to make sure that their citizens are able to use the tools when they are available.

- *Legal Guidelines for Removing Barriers to Deployment*

The Municipal Broadband Toolkit contains some practical legal and regulatory barriers to broadband deployment that jurisdictions can remove. An example is easing restrictions on the lengths of radio antennas to facilitate wireless broadband.

## **2. Leverage Public Works Projects for Fiber Deployment**

We believe that broadband penetration would be strengthened greatly by ensuring that every public works project that involves excavation of road surfaces, replacement or repair of sewer lines, sidewalk repair, creation of walking trails, utility pole replacements and other similar projects includes an assessment and enhancement of fiber deployment. Simply put: if you're digging up the ground, at least put in conduit for wiring and document what's already there. One method that jurisdictions might consider is to set a policy that requires all public works projects to put up a public notice that work is going to be done. Then, private companies and other entities can be allowed to run conduit and/or fiber optic cable

in such a way that does not interfere with or delay the main project.

The company would own and be responsible for the conduit after that point. Although this would require considerable advance coordination, we feel that this could incrementally improve the state of wired broadband immensely.

### **3. Recognition of Multiple Technologies and Business Models**

As indicated in the Federal Trade Commission's report on municipal wireless networks, there are many technologies and business models being used and experimented with across the country. The BATF recommends that COG member jurisdictions recognize that no single technology or business model is absolutely correct. Rather, municipal broadband is likely to be delivered through a number of technologies employing a number of different business models, even within the same city or county. The decision rests on factors unique to the jurisdiction. Therefore, policy should not be tied to technology but should allow for flexibility.

## **NATIONAL RECOMMENDATIONS**

### **1. Creation of a National Broadband Strategy**

The BATF echoes calls by other groups for broadband strategy on a national level. While recognizing a locality's need to set its own direction, this strategy could include some or all of the following:

- *National Office of Broadband*

Similar to offices created by state and local governments, a National Office of Broadband should be set up to set policy direction for the United States. The National Office should work with the FCC and local Broadband Offices to create and maintain a database of broadband availability for purposes of research.

- *New Definition of Broadband Speeds<sup>18</sup>*

Given the requirements of today's digital content as well as the speeds enjoyed by consumers in Europe and Asia, we feel that a new, faster standard for broadband should be formally adopted. In addition, we recommend setting a goal for the metropolitan Washington region of 1 gigabit per second.

- *Change FCC Data Collection Mechanisms*

In order to facilitate study of broadband availability and to hold companies to account for the terms of franchise agreements, data collection should be enhanced by a new, more complete mechanism than Form 477. This should include at a minimum the number of subscribers within a zip code by bandwidth/speed or technology rather than just counting a zip code as "served" if one consumer subscribes

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<sup>18</sup> Technically, bandwidth is a measurement of the capacity of a transmission medium and not its speed, but speed is more commonly used.

within that zip code. The data should be made available in a secure manner to the National Office described above and designated local government officials.

- *Funding for Localities to Meet Strategic Goals*

Existing funding programs (such as E-Rate and Rural Universal Service) need to be modified to encompass new technologies. In addition, new funding programs should be established to assist local jurisdictions in meeting new broadband goals. Otherwise, jurisdictions face new unfunded mandates.

- *Recognition of Broadband as a Critical Resource*

We believe that broadband connectivity is a critical resource akin to a utility, and we seek national recognition of this concept.

- *Spectrum Policy*

In the area of radio frequency (RF) spectrum policy, the BATF recommends the following:

- i. *Unlicensed Spectrum:* The FCC should expand the amount of unlicensed spectrum available for general use. We feel that the existence of unlicensed spectrum creates opportunities for innovation. In addition, the FCC should allow unlicensed spectrum to be used at

higher power levels, lower frequencies and with broader channels in order to make it useful for a wider array of applications.

- ii. *Licensed Spectrum*: We call for more coordinated efforts between existing owners of RF spectrum, such as public safety and the transportation and private sectors, to allow for greater flexibility within spectrum bands so that applications in the public interest can make use of that spectrum. Technologies such as smart radios can effectively expand the amount of available spectrum, and we recommend that these be employed where possible.

## **2. Encourage Competition at All Levels**

Competition of nearly any kind is directly linked to improvements in access to high speed networks, even when the access is not furnished by the competitive operator. State and local authorities should do all they can legislatively to promote competition and encourage as many competitive entities and operating/business models as possible. As with public infrastructure, priority should be granted to those entities whose efforts narrow the digital divide; this includes limited franchises, public easement and right of way access, etc.

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## Appendix A:

### Findings of the Digital Divide Task Force

The DDTF recommended that the COG Board and area local governments endorse four principles to promote digital opportunity in the Washington metropolitan region.

- **Principle One:** All citizens of the Washington metropolitan region should have access to information and information technology.
  - **Goal A:** Local governments should provide computer and Internet access to residents who lack access at home or work through libraries and senior and community centers, and provide appropriate training to allow users to obtain the maximum benefits of technology.
  - **Goal B:** Local governments should seek partnerships with private sector and community-based groups to provide alternative computer and Internet access in facilities such as shopping centers, telework centers, child care centers and sports facilities.
- **Principal Two:** High-speed technology infrastructure is essential for the economic development of communities and should be available throughout the Washington metropolitan region.
  - **Goal A:** Local governments should move aggressively to track information on existing and planned high-speed technology infrastructure using their land use, zoning and regulatory authority and map this information using Geographic Information System (GIS) technology.
  - **Goal B:** COG should seek funding and/or partnerships with the technology industry and local governments to prepare and regularly update a consolidated regional map of technology infrastructure.
- **Principal Three:** Local governments should be leaders in promoting digital opportunity.
  - **Goal A:** Local governments should expand the content of public information and services available on the Internet.



- **Goal B:** Local governments should ensure that public information and services are available in a variety of languages and formats suitable for persons with disabilities.
- **Goal C:** Local government public schools should evaluate the need for computer and Internet training for teachers to ensure that students in turn receive the best instructional training on new information technology.
- **Goal D:** Local governments should identify and evaluate technology access by residents and businesses and establish and monitor progress in attaining accesses goals.
- **Principle Four:** Information on digital opportunity programs, services and resources should be readily available to local governments, businesses, the technology industry, community-based groups and citizens.
  - **Goal A:** COG's Library Directors Committee and Chief Information Officers Committee should jointly evaluate existing technology clearinghouses and explore the possibility of establishing a broader, Washington area clearinghouse.
  - **Goal B:** COG should identify existing or new regional mechanisms and the funding strategies necessary to establish an ongoing digital opportunity work program focus in the Washington metropolitan region.

In order to address the complex nature of the Digital Divide in the Washington metropolitan area, COG's Digital Divide Task Force has developed a series of implementation strategies to address these issues. These implementation strategies seek to address the critical role that COG can play in promoting equal access to computer and Internet technologies. They also look to promote a climate where both government and business can utilize the digital world equally, efficiently and to its broadest potential.

- Digital Divide Implementation Strategy 1: Formalize a Regional Technology Access and Opportunity Task Force

- Digital Divide Implementation Strategy 2: Conduct a comprehensive Digital Access School Survey for the Washington metropolitan region
- Digital Divide Implementation Strategy 3: Produce a regional E-Commerce and E-Government development plan
- Digital Divide Implementation Strategy 4: Construct a regional computer recycling program

## **Appendix B:**

### **Mission and Goals of the Broadband Access Task Force**

#### Mission:

The mission of the Broadband Access Task Force is to strengthen the region's economy and transform its communities by fostering the development of broadband internet access throughout the National Capital Region, as a key feature of common public infrastructure. Building upon the 2002 report and recommendations of COG's Digital Divide Task Force, the new effort will identify and promote local and regional broadband access initiatives to help residents, businesses, schools, public agencies and community organizations make effective use of this technology to achieve their program management, telework, telemedicine, education, and service delivery goals while providing a greater experience for visitors to the region.

#### Key Issues:

- Access
- Affordability
- Utility

#### Goals:

1. Foster economic growth through the development of technology neutral broadband access networks
2. Improve broadband access for residents, businesses, public employees and visitors and ensure that all residents have access to one or more means of broadband connectivity
3. Define the role of governments in supporting the development of broadband access networks
4. Support the COG Board and Transportation Planning Board goals for increasing the proportion of teleworkers in the region
5. Inform policy-makers regarding the technology and telecommunications issues associated with region-wide broadband network development and deployment
6. Support recommendations that foster the development of - and steering to - content and applications that enable all residents,

citizens, and visitors to participate in the digital economy once access to broadband is achieved

Deliverables:

- A one-day, regional forum for policy-makers and subject matter experts to discuss and vet options for the development of technology-neutral broadband access networks, including presentations and discussions related to model programs, best practices, and promising approaches
- Policy recommendations that support the development of technology-neutral broadband access networks, which can be adopted within the State of Maryland, Commonwealth of Virginia and the District of Columbia by either administrative or legislative means
- Report on regional initiatives and policy recommendations, to include steps local governments can take to support the goals and recommendations of the Task Force and outcomes associated with the regional forum
- A toolkit for local governments to use as a guide – or blueprint - to develop local broadband initiatives and policies

## Appendix C:

### Results from Metropolitan Washington Regional Broadband Survey

In the summer of 2006, the BATF conducted a survey of COG member governments regarding their attitudes toward municipal broadband and projects that were currently underway. Twenty-one (21) surveys were distributed and sixteen (16) responses were submitted for a response rate of 76.2%. The tables below show the questions that were asked and the responses given.

Question	Option	Count	Notes
<b>CURRENT PROJECTS</b>			
Does your jurisdiction provide broadband access via a government-owned and/or operated network?	Yes	9	<ul style="list-style-type: none"> <li>_____ government provides high-speed access only for internal government use. _____ purchases ISP services from the State through the State's initiative; these ISP services provide access through _____ government's fiber network to County government, _____ Public Schools and _____ Community College. We use commercial DSL and cable modem service for remote, small facilities, although we currently are pricing satellite service for two sites in the County where other commercial service (DSL, cable modem) is unavailable to a public</li> </ul>
	No		

Question		Option	Count	Notes
If so, what technology/ies are employed?	No		3	<ul style="list-style-type: none"> <li>• facility.</li> <li>• For government only</li> </ul>
	Fiber		6	
	Other Wireline		2	
	3G Wireless		4	
	WiFi		5	
	Satellite		1	
	WiMAX		1	
	Other		3	<ul style="list-style-type: none"> <li>• Microwave, Broadband over powerlines</li> <li>• ATM, MetroEthernet, MESH, Frame Relay</li> </ul>
What services do you provide on this network?	Internet Access		8	
	Intranet		6	
	Public Safety Applications		7	
	Voice		6	
	Video		5	
	Other		2	<ul style="list-style-type: none"> <li>• Internal – E-Government; External – Web Browsing</li> </ul>
How was this project financed?	Special tax revenue			
	Government budget		7	<ul style="list-style-type: none"> <li>• Funds provided through general revenue and a Cable fund</li> </ul>
	Private		1	

Question	Option	Count	Notes
Were/are private vendors used for any portion of the project?	investment		
	Federal grants or other funds	1	
	State grants or other funds		
	Other	3	<ul style="list-style-type: none"> <li>Some start-up funding provided by city to franchise operator, to be paid back</li> <li>Cable television revenues</li> <li>Cable Franchise Agreement</li> </ul>
	Network architecture design	7	
	Network rollout	6	
	Negotiations	4	
	QA testing	4	
	Help desk/support	3	
	Network maintenance	6	
Does your jurisdiction (either to government or private enterprise) receive any federal funds to	Content delivery	3	
	Other		<ul style="list-style-type: none"> <li>Comment: Network designed, built and maintained through dedicated County resources.</li> </ul>
	Yes		
	No	15	

Question	Option	Count	Notes
provide broadband access (e.g.: Universal Service Fund or Rural Utilities Service)?			
Have you made any investments in broadband specifically for public safety?	Yes	11	<ul style="list-style-type: none"> <li>_____ has land line broadband capability to its Public Safety facilities and government buildings through an Institutional Network (I-Net) built through the County's Cable Franchise Agreement. _____ is a participant in the NCR Wireless Broadband project, that provides a government owned and operated wireless infrastructure for Public Safety and Emergency Operations. Funding for this is currently through UASI.</li> </ul>
	No	6	

Question	Responses
ATTITUDES TO BROADBAND	
What benefits do you see broadband technology bringing to your jurisdiction?	<ul style="list-style-type: none"> <li>Economic development, assist with digital divide, better access to e-gov services</li> <li>In Government use: accessibility (always-on), interoperability, increased data capacity (video, voice and mass data transmission), non-reliance on public networks during crisis (allows communication even when private circuits are overwhelmed), improved productivity (faster access, more data, convergence of voice, data and video),</li> </ul>



Question	Responses
	<ul style="list-style-type: none"><li>• reduced operating costs. There are plenty of commercial offerings available for public use in _____, with the demographic data indicating about 83% households have on-line capabilities. We view this capability as important to the county's economy and provides support for Telework and other regional goals.</li><li>• Economic development, opportunity to reduce traffic through telecommuting, increased access and opportunity which in turn reduces the digital divide</li><li>• Providing I-Net access to all income levels, supporting economic development, and improving government and business operations</li><li>• An earlier survey conducted in _____ showed that residents with broadband access are 50% more likely to telework than residents w/o broadband. Almost 70% of _____ residents have broadband access. Access to broadband access helps take cars off of roads.</li><li>• We now show our board of supervisor's meetings online and historical board meetings are available on demand. Residents with broadband access can easily watch board meetings that have been archived. This leads to more informed residents.</li><li>• _____ hopes to expand its broadband capabilities from the Police's Mobile Data Computer application into other County agencies.</li></ul>

Question	Responses
	<p>In the immediate future, we are looking to implement an Automatic Vehicle Tracking System, initially for our Department of Public Works and Transportation Snow Plow operation. Our plans are then to branch out into other Public Safety initiatives such as Fire and EMS vehicle accountability, and Sheriff Deputy Warrant Service accountability.</p> <ul style="list-style-type: none"><li>• Increased citizens satisfaction, attract new businesses, improved quality life, reduction in costs/avoidance of planned expense, Improved business processes and practices.</li><li>• Competition, hopefully lower access fees for users to make it affordable for all.</li><li>• The City currently has broadband technology provided to it by Comcast and Verizon.</li><li>• We see a wealth of benefits:<ul style="list-style-type: none"><li>○ Schools: Our _____ private intranet, known as _____ will be used to connect all of the _____ public schools, ensuring that network connectivity is never a barrier to any teaching and learning endeavor/application that a school wants to undertake.<ul style="list-style-type: none"><li>▪ We also believe that via our peering with MAX [ed. note: Mid-Atlantic Crossroads], the regional technology consortium that students can</li></ul></li></ul></li></ul>

Question	Responses
	<p>participate in science and technology collaborative projects with industry leaders around the country.</p> <ul style="list-style-type: none"><li>▪ We also believe that enhanced connectivity will enable parents to more effectively communicate with the faculty and staff at each individual school. The network will no longer EVER be a barrier!</li><li>○ Public Safety: Our _____ network has enabled the robust deployment of our citywide wireless broadband trial _____. This trial network enables first responders to have live video and robust data in their vehicles.<ul style="list-style-type: none"><li>▪ It has also enabled us to move all first responder radio traffic onto completely secure, redundant fiber rings, instead of unreliable carrier based copper circuits – at less cost to _____.</li><li>▪ _____ has also enabled us to rebuild/revise/enhance the way all E911 calls are being delivered to the PSAP in _____. This model is now being reviewed as a future model for all E911 calls. Each carrier now “direct connects” to our</li></ul></li></ul>

Question	Responses
	<p>fiber network and our redundant PBX. Previously, they were delivered via analog CAMA trunks, from a single Verizon Central Office, over a single copper cable, into a single building DMarc.</p> <ul style="list-style-type: none"><li>○ Digital Divide: We are now exploring the ubiquitous deployment of citywide Wi-Fi models that would bring broadband to the economically challenged residents in _____. The _____ network, as well as the _____ Poles and Buildings may be the key components of _____'s portion of any potential partnership. Again, the network will not be a barrier to a forward looking project like this from becoming reality.</li><li>○ Regional Participation: _____ is now able to participate in mission critical regional projects like WARN, NCR and MAX. Future projects may include WMATA and potentially enhanced collaboration with the Federal Government entities.</li><li>○ Improved general _____ application enhancement: When _____ was buying circuits from the carriers, cost was a primary factor in how much bandwidth</li></ul>

Question	Responses
	<p>could be purchased. While costs will always be an issue, the on-net costs for bandwidth are substantially less, and the volume of bandwidth is substantially higher than services provided from carriers. Hence, general government applications (HR, Finance, DMV applications...) run more efficiently and effectively.</p> <ul style="list-style-type: none"> <li>• Solely owned voice communications, video conferencing, reliable – robust data communications</li> <li>• It would provide another avenue for providing services to the public.</li> <li>• Broadband access is a crucial community utility in the 21st century, providing support for government operations, business communications, interpersonal communications, educational opportunities, employment and workforce training, health care, recreation, and tourism.</li> <li>• It is the critical infrastructure linking all of our major facilities together. It provides data and voice communications over a single platform.</li> <li>• N/A</li> <li>• Improved communication with citizens</li> <li>• Enables more functional and robust applications</li> </ul>
What were/have been the barriers to deployment of broadband technology by government?	<ul style="list-style-type: none"> <li>• Industry against it! Costs</li> <li>• For government use: Capital Costs, Coverage (wireless), rapid changes in technologies,</li> </ul>

Question	Responses
	<p>developing and establishing rights of way for cable and/or antenna locations, support and long term operational costs.</p> <ul style="list-style-type: none"> <li>• If offered to the public, in addition to the above, legal issues like CALFA and others introduce responsibilities to government that include possible monitoring and tracking responsibilities (for example), and may infringe on the public's privacy.</li> <li>• The governing body has determined that the marketplace can and should deliver these services.</li> <li>• Legality, financial support and technical support</li> <li>• Cost</li> <li>• Wireless services – Wi-Fi – need towers and pole infrastructure to increase their footprint.</li> </ul> <p>_____ does not own the light poles, traffic lights, or telephone poles to deploy equipment. Additionally, the vast majority of our county does not have this infrastructure. If we deployed this network it would only be available to residents in the densely populated area of _____.</p> <ul style="list-style-type: none"> <li>• Significant cost layouts have certainly presented challenges to all local governments who are constantly striving to be good stewards of the public's tax dollars and trust. _____ remains vigilant in the area, of broadband technology. We do not feel the availability of broadband technology has kept pace with the need in the Washington Metro area, although recently,</li> </ul>

Question	Responses
	<p>as in the case of Homeland Security needs, there has been an insurgence of enthusiasm for broadband which is encouraging.</p> <ul style="list-style-type: none"> <li>• Federal and state laws and regulations</li> <li>• Private industry does not want competition in arenas the serve.</li> <li>• Cost of equipment, personnel/contractors to perform discovery, obtain right of ways from utility companies, cost installation and when implemented, the cost of ownership and maintenance.</li> <li>• Verizon was selling _____ millions of dollars worth of MAN circuits. They fought the “insourcing” of the MAN network a every turn.</li> <li>• Getting our CFO to understand that the initial investment would pay long term dividends in the future.</li> <li>• None of note</li> <li>• The main barrier would be cost, upfront and ongoing.</li> <li>• The first “barrier” is the question of whether government should deploy broadband in the first place. Other potential barriers include cost, competition with the private sector, lack of core competency, liability and security, and the regulatory environment.</li> <li>• Cost has been the biggest barrier. The City was fortunate to receive fiber as part of franchise</li> </ul>

Question	Responses
<p>Has the presence/lack of broadband infrastructure been a driver (positive or negative) of business development for your jurisdiction?</p>	<p>agreement. It is becoming more difficult to obtain fiber or other equipment as part of right of way or franchise agreement.</p> <ul style="list-style-type: none"> <li>• N/A</li> <li>• Dedicated funding sources</li> <li>• Adequate broadband commercially available, so not a factor</li> <li>• NO</li> <li>• During the annual business appreciation week, several small businesses have mentioned that the lack of broadband services in pockets of _____ as having a negative impact on their business, particularly for employees who could telecommute if they had acceptable access speeds.</li> <li>• 40% of the internet traffic in the world comes through _____. The presence of broadband infrastructure has been a positive for _____.</li> <li>• Broadband technology is still experiencing growing pains as more and more use of emerging technology takes place. _____ began its first broadband venture with our Public Safety Mobile Data Computer effort utilizing CDPD technology. CDPD support was pulled from the marketplace in December of 2005 forcing us to CDMA technology. Now it seems that there are many more choices available, though each seems to have its good and bad points.</li> <li>• Yes</li> </ul>



Question	Responses
	<ul style="list-style-type: none"> <li>• Lack of service has deterred some businesses in parts of the city where traditional telco services don't have capacity to provide new connections. Telco has been reluctant to expand or engineer new circuits to serve.</li> <li>• I am sure it has not helped, but am not sure if that specific item has hampered it.</li> <li>• Positive. Overall business within _____ is doing very, very well in almost all aspects. Any outstanding government obstacles are generally understood to be process or program centric, not related to the technology infrastructure.</li> <li>• Presence – positive impact</li> <li>• Fiber to the premises will be a reality in 5 years across the County as the result of the Verizon FIOS deployment. Will provide true broadband access to businesses as well as residential properties.</li> <li>• No. The lack of government broadband access has not had an impact on local business development.</li> <li>• _____ has extensive broadband infrastructure, which is part of the reason why more than 200 technology businesses, employing over 10,000 people, call _____ home.</li> <li>• We occasionally hear from businesses which are not satisfied with the choices in the marketplace. Businesses in _____ do have choices, but there are fewer now than there were seven years ago as the telecommunications industry</li> </ul>

Question	Responses
<p>If you were considering implementing broadband technologies in your jurisdiction, what questions would you ask? What information would be most important to you to help you make the necessary decisions?</p>	<p>continues to consolidate.</p> <ul style="list-style-type: none"> <li>• Positive impact for developing city applications</li> <li>• Positive</li> <li>• Regulatory issues, costs (affordability, operational aspects)</li> <li>• What problem or service gap would doing this solve?</li> <li>• Why would we compete with our business constituents and what would be the impact to our tax revenues that currently come from the IT industry that is located in our county?</li> <li>• What responsibilities to the public are come with providing this service?</li> <li>• What are the investment and on-going operational costs?</li> <li>• What is the return on investment if any?</li> <li>• What technologies are appropriate and would meet the widest range of household needs?</li> <li>• Would this be viewed as an entitlement?</li> <li>• What are the legal implications for service and information traveling through the network?</li> <li>• Can the marketplace provide the service and, if not, why? How will citizens and government benefit? How should a broadband initiative be funded? Are there public and private partnerships available to enable a broadband initiative? What public resources are needed in the short term as well as the long term to implement and sustain a</li> </ul>

Question	Responses
	<p>broadband initiative? To evaluate services, we would ask: are static ip addresses available? Is there a toll-free number for assistance? Is there one bill for all accounts? Is there a government discount/contract? Are there guaranteed rates? Information that would be useful to making necessary decisions includes case studies and lessons learned from currently operating broadband initiatives, funding, grant and partnership models and opportunities, local analysis including a needs assessment and ROI, coverage maps, user experience, speed comparisons, references.</p> <ul style="list-style-type: none"> <li>• Can it be done turnkey? How will it be marketed to low/moderate income?</li> <li>• As it relates to citizens:             <ul style="list-style-type: none"> <li>○ Is there a need?</li> <li>○ Is there a demand that the free market is not meeting?</li> </ul> </li> <li>• As it relates to government operations             <ul style="list-style-type: none"> <li>○ Are there services that can be purchased on the open market?</li> <li>○ Eg -- 20 years ago should localities have built their own cell phone networks because cell phone providers were not building their network fast enough?</li> </ul> </li> <li>• Coverage areas, Start-up costs, On-going costs, Data sharing opportunities with other jurisdictions,</li> </ul>

Question	Responses
	<p>Growth opportunities, support responsibilities.</p> <ul style="list-style-type: none"> <li>• Return on investment? Demographics, percentages of businesses and population not having broadband access and the barriers.</li> <li>• Affordable, range of options to choose from.</li> <li>• Available to majority of citizens, not just in selected areas.</li> <li>• Do you have the backing of the leadership (elected and appointed) of your government.</li> <li>• Do you have the initial capital to build, or partner in place to support you.</li> <li>• Do you have the team in place to design, build and maintain the network.</li> <li>• Do you have a plan for the ongoing funding and management/maintenance of the network. <ul style="list-style-type: none"> <li>○ In the case of _____, the funding comes from dollars not sent to Verizon for overpriced, low speed services.</li> </ul> </li> <li>• What are the costs of building and sustaining the network?</li> <li>• How ubiquitous is it?</li> <li>• What bandwidth will you have?</li> <li>• Does the jurisdiction own a portion or all of the network?</li> <li>• Does the jurisdiction have final say as to the management of the network?</li> <li>• Who determines the quality of service (QoS) for local applications?</li> </ul>

Question	Responses
	<ul style="list-style-type: none"> <li>• What information would be most important to you to help you make the necessary decisions?</li> <li>• How was this implemented in other jurisdictions which are of equal size? How could we improve on that implementation?</li> <li>• The key questions are whether residents and businesses are being served by the market, in terms of available speeds and technologies, cost, and service.</li> <li>• Who are the stakeholders? Who will benefit from broadband? Is it helping bridge the digital divide? Will it benefit public safety? What is the ROI? Does it improve competition? Is it price competitive?</li> <li>• N/A</li> <li>• Our organization provides technology services to other departments. We consider it if one of the departments makes a request such as the libraries. In the case of free public WiFi access, urban business districts are driving the consideration.</li> </ul>
<p>In your opinion, what is the government's role in providing broadband to its citizens?</p>	<ul style="list-style-type: none"> <li>• Broadband has become a virtual utility. In some areas of the country, it is absolutely mandatory.</li> <li>• Do not believe it is government's role to directly provide this service to the citizens, as a government run network. Believe it is government's role to provide the political and economic climate to encourage private sector development for citizen access to broadband technologies.</li> <li>• _____'s governing body has taken a position</li> </ul>

Question	Responses
	<p>to allow the marketplace to deliver these services.</p> <ul style="list-style-type: none"><li>• Not clear since this is a major urban market</li><li>• If the free market is not building/providing broadband services then the local government needs to determine if there is an economic justification for developing and deploying services in their area. Government needs to determine if access to broadband is a utility that residents cannot do without, both today and in the future.</li><li>• The ability of the government to provide a robust communications network dedicated to government business which can function in times of localized emergencies without interference is paramount, but can be a costly endeavor, both in funding as well as the resources to maintain such a network. This insures a jurisdiction must work smarter to be able to do more with less.</li><li>• Streamlining existing processes and implementing new policies to make it easier for telecommunication providers to enter any jurisdiction thus providing a competitive environment where citizens and businesses are provided with options to choose from.</li><li>• Encourage private industry to bring services. Facilitate access and franchise agreements. Government should not compete with private industry if there is one offering service in the area, servicing all citizens, not just pockets of coverages</li></ul>

Question	Responses
	<p>to claim the territory.</p> <ul style="list-style-type: none"> <li>• Our residents have an option to utilize Comcast cable or Verizon DSL for broadband – both are as a direct result of franchise agreements.</li> <li>• Determine if there is a need, don't take the private industry's word that there is no problem...</li> <li>• Help determine what the appropriate solution is to provide ubiquitous affordable broadband. (build/buy/partner... whichever the right solution for the jurisdiction is)</li> <li>• Ensure that the appropriate solution is implemented and MAINTAINED.</li> <li>• The Government should seek to identify a private partner who will be responsible for the building, operation and management of the network.</li> <li>• It would be unrealistic for a government to believe it can find the financial and human resources to support the network.</li> <li>• A public-private partnership is preferred.</li> <li>• NA</li> <li>• _____'s approach has been to avoid competing against the private sector when the market is adequately providing broadband services. Using the model described in the information about _____, we have instead stimulated the market to expand broadband availability without government competition.</li> <li>• Government's role should be to encourage</li> </ul>

Question	Responses
	<p>competition and manage the public right of ways to ensure all providers are treated equally. In jurisdictions where there are no privately provided broadband choices, it may make sense for government to fund or provide services to its citizens.</p> <ul style="list-style-type: none"> <li>• Government's role in providing broadband to its citizens is to make sure that specific measures are in place to ensure equitable broadband deployment in all communities.</li> </ul>
<p>What motivations do you think drive local government interest in providing broadband access to residents?</p>	<ul style="list-style-type: none"> <li>• Economic development &amp; digital divide solutions</li> <li>• Lack of private sector capability, investment in infrastructure and or cost effective pricing for some residents for these services; strong citizen support to meet the need, economic development and bringing new businesses into area to increase tax base; benefit in having citizens on-line in extending the county's ability to provide services on-line.</li> <li>• Governments that are in underserved areas have an internal service need and can facilitate public and/or partnerships policy to provide service where the marketplace does not. In areas with adequate broadband service, governments may choose to provide public broadband access as they meet internal needs to differentiate their jurisdiction, to provide choice, to encourage economic development.</li> <li>• Access, connectivity and economic development</li> <li>• Meeting an unmet need.</li> </ul>



Question	Responses
	<ul style="list-style-type: none"> <li>• Requests from citizens for broadband access, Local businesses, Educational institutions learning opportunities for citizens, County services</li> <li>• Citizens satisfaction with their government</li> <li>• No cost in tax dollars to citizens.</li> <li>• Economic development, and perhaps services where none exist.</li> <li>• Well educated, informed, and trained citizens that are more productive in all areas of society.</li> <li>• When no competitive alternative is present. This is not the case in our metropolitan Washington region.</li> <li>• The public interest.</li> <li>• Some motivations include closing the digital divide, filling gaps in the market, raising revenue, and promoting public relations or politics.</li> <li>• Requests from residents, digital divide issues, and lack of broadband choices.</li> <li>• The motivations that drive local governments to provide broadband access to all residents are the availability of robust and reliable broadband services and products.</li> </ul>

Question	Option	Count	Notes
OTHER QUESTIONS			
Regardless of whether your government provides broadband access, how well have broadband technologies been adopted in your	Very well, nearly everyone uses	5	

Question	Option	Count	Notes
jurisdiction?	it		
	Modestly well, better than half the jurisdiction uses it	6	
	Fairly well, about half or slightly less use it	3	
	Poorly, less than half use it	1	
	Nearly no one uses it		
	Unknown	1	(write-in answer)
Do you have specific statistics about broadband adoption and/or availability in your jurisdiction?	Yes	6	<ul style="list-style-type: none"> <li>Through publicly available studies from: State of Maryland, Maryland Technology Development Corporation (TEDCO), National Association of Telecommunications Officers and Advisors (NATOA) and from a recent local cable franchise needs assessment</li> <li>_____ has an 86% broadband penetration rate: <ul style="list-style-type: none"> <li>65% of homes use broadband at home (adoption rate)</li> </ul> </li> </ul>

Question	Option	Count	Notes
			<ul style="list-style-type: none"> <li>○ 10% of residents do not have any internet access at home</li> <li>○ 25% of residents use dial-up.</li> <li>• The latest University of Virginia yearly Citizens Satisfaction Survey shows over 60% of _____'s residents have used _____'s web site.</li> <li>• We have an enormous number of statistics available concerning our private broadband intranet. (sites where we have fiber, sites that are lit, planned sites, Mbps per site, number of users, etc...)</li> <li>• However – it is only for our Intranet, not a public network.</li> <li>• Proprietary information provided by the Cable television providers to _____ which we are not at liberty to share without prior written consent of the Cable television providers (Comcast and Verizon).</li> <li>• Comcast can offer cable modem access to nearly all households. Verizon offers DSL service to more than half of all _____ households. The City has been negotiating with Verizon to offer FiOS service in</li> </ul>

Question	Option	Count	Notes
			<p>_____. There are still a few ILECs offering service in _____. The latest statistics on Internet access (not limited to broadband) shows 86% of _____ residents have access at home.</p> <ul style="list-style-type: none"> <li>• Comment: Internal – Almost all county locations are on broadband; External – no</li> </ul>
	No	9	<p>We are served by Comcast, Verizon DSL and others. Through at least one vendor broadband is available to the majority of citizens across the city. Our BPL franchise has approximately 800 customers. Issue common to all is cost. Reviewing our city website usage stats we see that a majority of users access the site by dialup. This is declining as more subscribe to services.</p> <ul style="list-style-type: none"> <li>• Columbia Telecommunications has done much of this research; I would talk with them <u>first</u>. Then MetroCIOs.</li> <li>• Economic Development Authority, NV and other Technology Councils, Public Technologies, Inc.; Digital Government; Broadband Properties (magazine)</li> </ul>
What resources (e.g.: studies, surveys, subject matter experts) would you recommend we use to understand broadband availability in the region?			

Question	Option	Count	Notes
			<ul style="list-style-type: none"> <li>• National Association of Telecommunications Officers and Advisors (NATOA)</li> <li>• Maryland Technology Development Corporation (TEDCO)</li> <li>• Center for Digital Government</li> <li>• Both MACo &amp; MML – Maryland Association of Counties &amp; MML and Maryland Municipal League – have members with pertinent broadband information within the region</li> <li>• <a href="http://www.lastmileonline.com">www.lastmileonline.com</a></li> <li>• OneCleveland initiative</li> <li>• Communicate with incumbent providers (Cable, DSL, Wireless, Fiber) on coverage areas to determine spread and depth of coverage. Conduct yearly community survey's to understand what residents are using as it relates to broadband technology.</li> <li>• _____ would suggest the recent NCR-RWBN study conducted under the auspices of the MetroCIO group.</li> <li>• Try to obtain the subscriber count information from the typical broadband franchise holders and the Telcos for DSL and high speed data</li> </ul>

Question	Option	Count	Notes
			<p>type of circuits. Compare to region household population to gain an approximate broadband installation %.</p> <ul style="list-style-type: none"> <li>• Talk with other Consortiums (WRLC, MAX, NetworkVA, etc...)</li> <li>• Feds</li> <li>• State-nets (Maryland and Va)</li> <li>• Private firms like Verizon and Allied Telecom</li> <li>• Need to talk to the commercial providers of these services and not rely on consultant who will merely estimate numbers.</li> <li>• NA</li> <li>• TheList.com offers a large inventory of Internet service providers organized by area code.</li> <li>• PGINECC (Prince George's County Intergovernmental Network Community Coordinating Committee).</li> <li>• John Castner is an excellent resource for the county as well as NCR initiatives.</li> </ul>

## **Appendix D:**

### **Commonwealth of Virginia Executive Order 35**

#### **NUMBER THIRTY-FIVE (2006)**

#### **ESTABLISHING THE OFFICE OF TELEWORK PROMOTION AND BROADBAND ASSISTANCE**

##### **Importance of the Initiative**

Encouraging telework is a family-friendly, business-friendly public policy that promotes workplace efficiency and reduces strain on transportation infrastructure. It is incumbent on state government to support public and private sector efforts to promote widespread adoption of telework efforts.

A key success factor for the adoption of telework is the availability of affordable broadband level telecommunication services. Because of the critical role broadband plays in the deployment of advanced applications such as telework, widespread access to broadband services is critical to the economic well-being of the Commonwealth of Virginia. Access to broadband provides communities with the foundation necessary for economic growth and a sustainable quality of life. At present, too many communities both urban and rural are not afforded access to broadband telecommunications and hence deprived of their ability to participate in enhanced social, education, occupation, healthcare, and economic development opportunities. It is critical that all Virginia communities have equal and affordable access to broadband telecommunications. Also, ubiquitous broadband will enable the Commonwealth to lead the nation in the deployment of high technology services and applications.

##### **The Office of Telework Promotion and Broadband Assistance**

By virtue of the power vested in me by Article V of the Constitution of Virginia and Title 2.2 of the Code of Virginia, I hereby establish the Office of Telework Promotion and Broadband Assistance within the Office of the Secretary of Technology. The Office will consist of a director appointed by the Secretary of Technology and additional professionals as the Secretary shall determine.

The director shall have the following duties:

- Promoting and encouraging use of telework alternatives for public and private employees, including but not limited to appropriate policy and legislative initiatives.
- Support the efforts of both public and private entities within the Commonwealth to enhance or facilitate the deployment of, and access to competitively priced, advanced electronic communications services (commonly known as “broadband”) and Internet access services of general application throughout the Commonwealth.
- Specifically work towards establishing affordable, accessible broadband services to underserved areas of the Commonwealth and monitor advancements in communication that will facilitate this goal.
- Advocate for, and facilitate the development and deployment of applications, programs and services including, but not limited to: telework, telemedicine, and e-learning that will bolster the usage of and demand for broadband level telecommunications
- Serve as a broadband information and applications clearinghouse for the Commonwealth and a coordination point for broadband related services and programs in the Commonwealth.
- Advise the Secretary on broadband adoption, deployment and application issues.
- Coordinate activities regarding telework with, and regularly report to, a board consisting of the Secretaries of Administration, Commerce and Trade, Finance, Technology and Transportation. The Secretary of Technology shall serve as chair of the board. Additional members may be designated by the Governor. Staff support to this group shall be provided by the offices of the Secretaries of Technology and Transportation.

This office shall not have the power to consolidate or otherwise have authority over advanced communications projects being conducted by public or private bodies outside of the executive branch of government. Staff support to the effort shall be provided by the offices of the participating cabinet secretaries, and the Governor shall designate additional agencies to provide staff support as necessary.

**Effective Date of the Executive Order**



This Executive Order shall become effective upon its signing and shall remain in full force and effect unless amended or rescinded by further executive order.

Given under my hand and under the Seal of the Commonwealth of Virginia this 12th day of September 2006.

Timothy M. Kaine, Governor

## Appendix E:

### Legislation on Broadband in the Commonwealth of Virginia<sup>19</sup>

As evidenced by the Commonwealth's top ten ranking in the Technet study, Virginia's legislators continue to be forward thinking in their approach to facilitating broadband deployments in the Commonwealth. From establishing processes by which qualifying localities can obtain municipal local exchange carrier (MLEC) status to enabling the development of wireless authorities, the General Assembly continues to enact legislation to promote competition and foster broadband deployment into underserved areas. Legislation related to broadband deployment includes:

#### **SB 959 Telecommunication and cable television; release of information (2005)** **Patron – William C. Wampler, Jr.**

*Summary as passed Senate:*

**Telecommunication and cable television service by localities; release of information.** Exempts from the mandatory disclosure requirements of the Freedom of Information Act any public record of a local government that contains confidential proprietary information or trade secrets pertaining to its provision of telecommunication services and cable television service. Public bodies may discuss such records in closed meetings.

#### **HB 2386 Conveyance of easements; eliminates public hearing requirement for localities. (2005)** **Patron – William K. Barlow**

*Summary as passed:*

**Conveyance of easements.** Eliminates the public hearing requirement for localities that convey certain site development easements across public property.

#### **HB 2404 FoIA; exempts certain local wireless service authorities (2005)** **Patron Clarence E. Phillips**

*Summary as passed House:*

Virginia Freedom of Information Act; exemptions; local wireless service authorities. Excludes from the mandatory disclosure requirements of the Virginia Freedom of Information Act (FOIA) confidential proprietary records and trade secrets developed by or for a local authority created in accordance with the Virginia Wireless Service Authorities Act (§ 15.2-5431.1 et seq.) that provides qualifying communications services as authorized by Article 5.1 (§

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<sup>19</sup> Excerpted from Jackson, 25-28.

56-484.7:1 et seq.) of Chapter 15 of Title 56 where disclosure of such information would be harmful to the competitive position of the authority. The bill also grants an open meeting exemption for discussions of such records by a local wireless service authority. The bill contains technical amendments.

**HB 2397 Public utilities; communications services (2003)**

**Patron - Joe T. May**

*Summary as passed:*

**Public utilities; communications services.** Gives the State Corporation Commission the authority to enforce the provisions of law that permit a locality to offer communications services, including local telephone service, to customers. Localities that have obtained a certificate to offer local telephone service are required to file an annual report demonstrating that they have complied with the requirements of law regarding certain accounting practices. Localities offering qualifying communications services, including high-speed data and Internet services, are required to provide nondiscriminatory access to for-profit providers of communications services on a first-come, first-served basis, are prohibited from cross-subsidizing such services, and are prohibited from acquiring facilities for such services by eminent domain. The Commission may deem telephone services competitive on the basis of a category of customers, and the Commission may also determine bundles of competitive and noncompetitive services if the noncompetitive services are available separately.

**SB 875 Telecommunications services; certificate (2003)**

**Patron - William C. Wampler, Jr.**

*Summary as passed:*

**Telecommunications services; certificate.** Creates a statutory procedure for cities and towns that operate a municipal electric utility and obtain a certificate to operate as a telephone utility to offer cable television services. Before offering cable television services, a locality is required to (i) hold a preliminary public hearing, (ii) hire a consultant to perform a feasibility study, (iii) hold public hearings on the feasibility study, (iv) determine whether such study finds that certain revenue requirements can be met, and (v) hold a referendum. The municipality shall establish a separate department for operation of cable television services, and establish an enterprise fund to account for the provision of such services, and cross-subsidization is prohibited. The requirements of clauses (i) through (v) will not apply to a locality that had obtained a certificate to operate as a

telephone utility and installed a cable television headend prior to December 31, 2002.

**HB 2164 Virginia Wireless Service Authorities Act (2003)**

**Patron - Clarence E. Phillips**

*Summary as passed:*

**Virginia Wireless Service Authorities Act.** Authorizes any locality to create a wireless service authority, which may provide qualifying communications services as authorized by Article 5.1 (§ 56-484.7:1 et seq.) of Chapter 15 of Title 56. The authority shall have many of the powers typically granted to authorities, including the issuance of revenue bonds.

**SB 245 Telecommunications services; local exchange (2002)**

**Patron - William C. Wampler, Jr.**

*Summary as passed:*

**Local telecommunications services.** Provides that any certificate for local exchange service or interexchange service granted by the SCC after July 1, 2002, shall be for service throughout the Commonwealth. Each local exchange carrier that was certificated before July 1, 2002, to provide service in part of the Commonwealth shall be certificated to provide local exchange service throughout the Commonwealth beginning September 1, 2002. The bill authorizes any county, city or town that operates an electric distribution system to provide telephone services within any locality in which it has electric distribution system facilities as of March 1, 2002, if the locality obtains a certificate for such service from the SCC and complies with all applicable laws and regulations for the provision of competitive telecommunications services. A county, city or town that does not obtain a certificate to provide telephone services may offer qualifying telecommunications services, including high-speed data service and Internet access service, upon application to the SCC. The SCC shall approve such a petition if it is in the public interest, and if the proposed services are not available in quantity, quality, and price from three or more providers in the proposed geographic area. This bill is identical to HB 1021.

As of July 2005, the Cities of Franklin, Danville (d/b/a Danville Department of Utilities), Bristol (d/b/a Bristol Utilities), Manassas, Salem, Martinsville, and the Town of Front Royal have been granted MLEC (Municipal Local Exchange Carrier) status. The City of Radford's application is pending.

*Other related legislation:*

**SB 942 Wireless enhanced 9-1-1 surcharge (2003)**

**Patron - Charles J. Colgan**

*Summary as passed:*

**Wireless enhanced 9-1-1 surcharge.** Specifies how CMRS providers can collect the wireless E-911 surcharge. Under the current statute, the surcharge is defined as a monthly charge billed monthly. Because prepaid wireless is not billed monthly, the bill provides that the surcharge may be collected either through monthly billing, adding the surcharge at the point of sale, or deducting an equivalent number of minutes.

**SB 148 Enhanced Public Safety Telephone Services (E-911) (2000)**

**Patron - Kenneth W. Stolle**

*Summary as passed:*

**Enhanced Public Safety Telephone Services (E-911).** Establishes the Wireless E-911 Services Board and the Public Safety Communications Division of the Department of Technology Planning, and continues the Wireless E-911 special fund. The Board shall be responsible for promoting and assisting the development, deployment and maintenance of a statewide enhanced emergency telecommunications system and enhanced wireline emergency telecommunication services in specific local jurisdictions not currently wireline E-911 capable. The Board shall also be responsible for overseeing and allocating the wireless E-911 special funds and managing moneys appropriated for enhanced wireline emergency telecommunication services in local jurisdictions not wireline E-911 capable as of July 1, 2000. Each mobile service provider shall collect a surcharge in the amount of 75 cents per month per customer, to be paid into the Wireless E-911 Fund. The Board shall use the moneys in the fund to pay the operators of the systems for their costs of operation pursuant to a budget proposal submitted to and reviewed by the Board. The Board shall have enforcement authority to ensure that funds are spent for their intended purposes and shall review each operator's actual expenditures at the end of each year. Local jurisdictions which have or will establish enhanced E-911 services are authorized to impose a special tax in an amount not to exceed \$3.00 per month per customer to be accounted for in a separate special revenue fund or in a cost center and revenue accounting system acceptable to the Auditor of Public Accounts. Funds collected from the tax shall be used to pay for reasonable and direct capital costs and operating expenses incurred by the E-911 service facility. All local jurisdictions are required to be operating a wireline E-911 system by July 1, 2003. Certain documents submitted to the Wireless Carrier E-911 Cost Recovery Subcommittee created by the bill are exempt from disclosure under the Freedom of Information Act and the Subcommittee is granted an exemption

to convene in a closed meeting when discussing or considering such documents.

**HB 568 Communications tax reform; revises services, report.**

*Summary as passed:*

Completely revises the taxation of communications services as follows. Applies a statewide communications sales and use tax to retail communication and video services on a competitively neutral basis. The communications sales and use tax rate will be 5% on the following: Local Exchange, Paging, Inter-Exchange (Both interstate and intrastate), Cable Television, Satellite Television, Wireless, Voice over the Internet (VoIP),

A \$0.75 "911 Tax" will be applied to each local exchange line (landline) and the current \$0.75 "911 Fee" will continue to be applied to each wireless number.

The state communications sales and use tax, and state 911 fees and taxes replace the following currently billed taxes and fees:

- Local Consumer Utility Tax (LCUT)
- Local Gross Receipts Tax (BPOL) - (Only the portion above 0.5% currently billed to customers, where applicable)
- Local E-911
- Virginia Relay Fee
- Cable Franchise Fee

A statewide rights-of-way use fee will be applied to all cable TV service lines as is currently applied on all local exchange telephone lines. The rate of the fee will be the same as determined annually by the Virginia Department of Transportation in accordance with § 56-468.1 of the Virginia Code.

The sales and use tax, 911 tax, and the cable rights-of-way fee assessed on consumers of video services from a single provider will be remitted to the Virginia Department of Taxation, which will administer the distribution of the Communications Sales and Use Tax Trust Fund within 30 days of receipt of the collections for a given month. The rights-of-way use fee assessed on consumers of both cable video services and voice services from a single provider will be remitted in accordance with subsection I of § 56-468.1. The 911 fees will be remitted directly to the Wireless 911 Board for administration.

The redistribution of taxes and fees is intended to be revenue neutral to localities and the Wireless 911 Board and shall cover the current cost of the Virginia Relay Center.

The provisions of the act will be effective on January 1, 2007.

**House Bill 1404 - Cable television systems; licensing and regulation thereof.**

*Summary as passed:*

Licensing and regulation of cable television systems. Establishes a new procedure by which cable operators may obtain authorization to operate cable systems in localities. The new procedure provides for localities to grant ordinance cable franchises as an alternative to negotiated cable franchises. Ordinance cable franchises may be requested by certificated providers of telecommunications services with previous consent to use a locality's rights-of-way, after requesting to negotiate a cable franchise agreement. Upon receipt of an application for an ordinance cable franchise, the locality shall adopt necessary ordinances within 120 days. A locality granting an ordinance franchise may, if it currently has fewer than three public, educational or governmental (PEG) channels, obtain up to three PEG channels from all cable operators. A locality that has approved a cable franchise in the 12 months preceding July 1, 2006, is exempted from provisions of this measure until an existing franchise expires.

## Appendix F:

### Maryland Recent Broadband-Related Legislation

**Senate Bill 728:** Telemedicine - Use and Reimbursement - Study  
**Sponsored By:** Senator Teitelbaum  
**Synopsis:** Requiring the University of Maryland School of Medicine, in consultation with the School of Nursing and other stakeholders, to conduct a specified study regarding telemedicine; requiring the School of Medicine to report to specified committees of the General Assembly by January 1, 2007; etc.  
**Status, May 2006:** Became Law – Chapter 266

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**Senate Bill 753:** Rural Broadband Communication Services  
**Sponsored By:** Senators Pipkin, Astle, Brinkley, Colburn, Dyson, Hafer, Haines, Harris, Hooper, Jacobs, Middleton, Mooney, Munson, and Teitelbaum  
**Synopsis:** Establishing the Maryland Rural Broadband Coordination Board; requiring the Board and affected units of State government to cooperate with specified entities in a specified manner for the establishment of rural broadband telecommunication services in rural and underserved areas; establishing a Rural Broadband Assistance Fund as a special fund in the Department of Business and Economic Development for specified purposes; etc.  
**Status, May 2006:** Became Law – Chapter 269

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**Senate Bill 789:** Creation of a State Debt - Statewide Fiber Optic Network  
**Sponsored By:** Senator Pipkin  
**Synopsis:** Authorizing the creation of a State Debt not to exceed \$2,000,000, the proceeds to be used as a grant to the Board of Directors of the Lower Shore Broadband Cooperative, Inc. for the planning, design, acquisition, construction, and installation of a statewide fiber optic network; providing for disbursement of the loan proceeds, subject to a requirement that the grantee provide and expend a matching fund; establishing a deadline for the encumbrance or expenditure of the loan proceeds; etc.  
**Status, Feb 2006:** Bill is in the Senate - First Reading Budget and Taxation

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**Senate Bill 848:** Education - Educational Technology Pilot Program - Elementary Schools

**Sponsored By:** Senator Conway

**Synopsis:** Establishing the Educational Technology Pilot Program in Baltimore City and Dorchester, Prince George's, Somerset, and St. Mary's counties; requiring the State Superintendent of Schools and specified organizations to develop a plan to implement the program in elementary schools; requiring the plan to meet specified requirements; providing for the funding of the program; etc.

**Status, May 2006:** Became Law – Chapter 276

## Appendix G:

### Seattle Broadband Task Force Recommendations

#### Recommendations

The Task Force recommends that the City adopt this goal:

##### **2015: Broadband for All**

Within a decade all of Seattle will have affordable access to an interactive, open, broadband network capable of supporting applications and services using integrated layers of voice, video and data, with sufficient capacity to meet the ongoing information, communications and entertainment needs of the city's citizens, businesses, institutions and municipal government. The Task Force proposes that the City take the following steps to move toward the goal:

- 1. The City should work with private companies to encourage them to develop high-speed networks for Seattle.**  
The Task Force began a dialogue with the incumbent cable and phone companies. We asked how the City could help them develop a broadband network meeting the goal of broadband for all by 2015. The companies have provided ideas and indicated their willingness to continue working with the City. The City should pursue this effort.
- 2. The City should develop its own network for municipal purposes, and potentially to support the creation of an open network available to the public.**  
The City already has done much to develop a broadband network for municipal purposes, and should continue developing this network both to support the functions and services of municipal government, and potentially to support the creation of an open network available to the public.

The City should centralize planning, construction and management of broadband for all divisions of the City to ensure that its system is developed in a coordinated way.

Network development should be consistent with the goal of having a state-of-the-art broadband system available to all of Seattle's residences, businesses and institutions. The City should explore the economic feasibility of a municipal build-out of a system available to the public.

The City should encourage all its departments, as well as other

governments and public agencies, to explore emerging technologies and applications that will improve service to citizens, decrease City costs, and increase City revenues.

The City should work with Seattle's businesses, major institutions and underserved neighborhoods to identify needs and conduct tests and demonstrations of broadband applications for meeting those needs.

A number of government entities and schools are developing and using broadband within Seattle and in the Puget Sound region. The City should continue cooperating with other local governments and institutions as it develops its network. Such cooperation could leverage Seattle's resources. It also could promote the development of broadband in surrounding communities where Seattle citizens go for work, school, and other activities.

**3. The City should make its communications network available to private service providers, when feasible.**

Wireless Internet service providers, for example, might be interested in using the City's fiber network to transmit data from remote sites to the Internet. Such uses would generate revenue for the City while increasing competition, bringing more choices to citizens.

**4. The City should monitor emerging Internet technologies, and take advantage of opportunities that make sense for Seattle.**

Fiber-optic cable installed to the premises currently appears to be the best long-term solution for a Seattle network; however, its expense should prompt the City to explore other technologies for possible interim deployment. Of particular interest are wireless and fiber connecting to existing copper, bypassing phone company central offices.

**5. The City should encourage local broadband enterprises that are developing next-generation applications, services and technologies.**

The City should actively promote experimentation, innovation and entrepreneurial activity in broadband technology, deployment and applications by facilitating companies' access to City facilities, property, right-of-way, etc., consistent with City regulations.

**6. The City should establish an Office of Broadband, with the authority and funding necessary to successfully carry out these recommendations.**

The City should provide a focal point for these recommendations by creating an Office of Broadband within the Department of Information Technology. By forming this office, the City will establish

accountability for following through on the recommended strategies, ensure that the City develops its internal broadband network in the most efficient and far-sighted way, and underline the importance of the effort to develop broadband.

**7. The City should create an advisory committee to provide advice and support to the Office of Broadband.**

The committee should include individuals who can contribute expertise related to the Office's functions, as well as people who can keep the Office connected with constituents and business.

**8. The City should monitor progress toward 2015: Broadband for All.**

The Office of Broadband should submit annual reports to the Mayor and City Council. In addition to reporting on the accomplishments of the Office, the report should assess the status of broadband competition in Seattle, the competitive position of Seattle compared to other cities, incumbent providers' progress and ability to meet the City's broadband goal, the state of citizen access and the digital divide, and the City's experience with private sector-driven broadband tests and pilots.

## Appendix H:

### Municipal Broadband Toolkit

This toolkit is designed to walk a local government through the thought process behind coming up with a strategy for municipal broadband. A jurisdiction's continuum of decisions ranges from “do nothing” all the way to “deploy a robust, government-owned network for public use” with several possibilities in between.

#### Step One: Determine the goals, or “pain points”

Governments come at the decision of whether to deploy municipal broadband networks from a number of different vantage points. In particular, there may be goals a jurisdiction has set (such as increasing employment, improving the quality of government services or lowering government costs), or there may be pain points that a jurisdiction is feeling (such as complaints about lack of connectivity, high service costs or low speeds) that prompt action. We recommend that you start here. Otherwise, decisions about municipal broadband get mired in discussions about technology, policy, costs and many other areas. These are also important, but as with any strategic planning process, the best place to start is with goals.

##### *What are your goals?*

The most common goals that lead to municipal broadband strategies are:

1. Economic development of the jurisdiction, through increased tourism, attracting businesses or appealing to more affluent residents (*Read case studies: St. Louis Park, MN; Saint Cloud, FL*);
2. Bridging the “digital divide”; a.k.a. ensuring lower income residents are not disconnected from important information and/or services (*Read case studies: St. Louis Park, MN; Philadelphia, PA; San Francisco, CA*); and
3. Providing government services online in order to reduce service costs and provide self-service options. Also enable non-government online services that are in the public interest, such as telemedicine (*Read case studies: Minneapolis, MN; Corpus Christi, TX*).

#### Step Two: Determine appropriate business model(s)

Over the past two years, hundreds of community WiFi projects have been initiated and many have received considerable attention. Much of the attention is centered on business models—and on the hopes of many to identify successful and proven business models for community broadband.

But it is important to note that this movement is in its infancy—and that most of the high profile projects are in the planning phase—they are years

away from being fully operational. This uncertainty is not evident if one reads press releases and mass-media articles. Coverage of these projects seldom recognizes that each community develops its own, particularized model to meet its own needs—and that neither the models nor the desired outcome are the same with respect to each project. Each municipal effort is unique and, ideally, uses a business plan that is tailored to its community's specific needs.

The choice of business model may be the most crucial decision for any broadband project because the choice of whether to own the network affects the cash outlay and risk (and potentially the reward) for each community. This issue of ownership is the key issue in business model development and suggests the two general business models (each of which has numerous variations) that can be summarized as follows:

1. Community Risk/Community Ownership

In this model, the community owns the network and conducts operations itself or contracts out operations/management/maintenance to a private sector company. This model gives the community control over such issues as pricing, technology choice, and access, as well as maintaining the community's control over the facilities to be placed in the public rights of way to build the network.

This model also potentially entails some risk because the community's capital investment may not be recovered through operating revenue. Of course, the community also stands to benefit from any surplus or profits, and can offset capital and operating expenses through savings from migrating internal communications to the network.

In the case studies presented below, variations on this business model are followed by St. Louis Park, MN; St. Cloud, FL; Corpus Christi, TX; and the potential San Francisco fiber project.

2. Shared Risk/Public Private Partnership

In this model, the community attempts to share the risk with the private sector by developing a partnership in which the community makes takes some but not all financial risk.

For example, the city may offer free or low-cost access to valuable community assets such as the public right of way, real estate, lamp posts, utility poles, or fiber optics—the risk here is the lost opportunity to use those assets for other purposes, as well as the risk of private sector default

or misuse of city property. In the case studies presented below, a variation on this business model is followed by the San Francisco wireless project.

In another variation of this model, the community may provide the access to assets discuss above, *and* agree to finance the network as an “anchor tenant,” providing payment for services but not taking on an ownership role. The risk to the community (in addition to those discussed above) is that the services may not meet expectations and the funds may not be well-spent. In the case studies presented below, versions of this business model are followed by Philadelphia and Minneapolis.

It is essential to note that this brief summary cannot replace customized analysis in the context of the community’s goals and objectives. Any community’s business (and technology) model should turn on your community’s goals and objectives.

### **Step Three: Read case studies that use the selected model(s)**

#### **Economic Development**

St. Louis Park, MN. The key motivator for St. Louis Park is economic development and digital inclusion—benefiting citizens and the community as a whole by making affordable broadband available to many residents and businesses that cannot now receive it. To this end, St. Louis Park is deploying a WiFi network that will be operated and maintained by a management partner but owned and directed by the city. To ensure that access is as broad as possible, all radio nodes are solar-powered with battery backup, enabling continued operation during brief and extended power outages (up to five days). For the same reason, the city is building significant fiber optics for backhaul in order to boost the capacity of the network and allow more use and enhanced commercial products (such as 100Mbps or greater speed to selected users).

St. Louis Park’s business model is city ownership. The city has a total commitment of \$5.3 million over a five-year period. St. Louis Park’s management partner operates the network and pays the city \$14 per month per subscriber. The city believes that the revenues from the management partner will pay back the city’s investment.

#### **For More Information:**

<http://www.stlouispark.org/residents/wireless.htm>

Saint Cloud, FL. Saint Cloud has deployed a city-wide WiFi network to boost broadband access and facilitate economic development. The city's business model is city-ownership. Saint Cloud invested approximately \$2.4 million to deploy a city-owned network. In addition, the city pays annual fees to HP to operate and maintain the network. The city believes residents will spend locally the money they save on communications services, increasing taxes and other city revenues. Saint Cloud feels that these increased revenues will offset the city's investment and operating costs.

**For More Information:** <http://www.stcloud.org/index.asp?NID=402>

## Digital Inclusion

Philadelphia, PA. From the first, the Philadelphia planners cited digital inclusion as their motivator and Philadelphia has selected and published eligibility requirements for reduced cost service for certain residents (the criteria are listed at [www.wirelessphiladelphia.org](http://www.wirelessphiladelphia.org)). Philadelphia is evaluating using network revenues to assist education, training, and equipment digital inclusion efforts. It is important to note that WirelessPhiladelphia has elements of other goals as well—the city explicitly cited economic development and city communications services as key drivers.

With respect to business model, the network is owned by Earthlink and overseen by a nonprofit (in an evolution from city-control). The city has not invested directly in the network though it did assist in funding of the business plan and other planning activities. In addition Philadelphia has agreed to be an anchor tenant, purchasing several million dollars in services over the first five years of operation.

**For More Information:** <http://www.wirelessphiladelphia.org>

San Francisco, CA. San Francisco has engaged in two public broadband initiatives, one that uses wireless technology in a public/private partnership with Google and Earthlink, and one that would potentially deploy city-owned fiber optics to every home and business in the city. The instigating drivers for both projects was digital inclusion—the need to ensure that all San Franciscans have access to broadband and its benefits—but both projects also acknowledge the key needs for economic development and government communications.

San Francisco's wireless project is still being debated by the Board of Supervisors as of this writing (some policy makers favor a city-owned



model). Under the current plan, the city will facilitate access to city assets so that Earthlink and Google may build and own a citywide WiFi network. Google will offer a free tier of service (at 300 kbps symmetrical) and Earthlink will sell higher-speed tiers. The city will receive funding of up to \$300,000 per year (depending on Earthlink's sales) to finance digital inclusion projects. The city will also have opportunity to use the network for some internal communications needs.

San Francisco's fiber project would be the first of its kind for a major American city (significantly, there are numerous municipal fiber-to-the-premises projects in Europe and Asia, as well as in small and rural American communities). The city commissioned a recently-completed feasibility study that recommended incremental deployment of fiber optics in three stages: first, a backbone of fiber to meet internal city needs, including public safety and emergency communications; second, a large pilot of fiber-to-the-premises in the city's development zone that would target key economic development and digital inclusion goals; and third, long-term deployment of fiber-to-the-premises throughout the city. The report recommends that the fiber be owned and maintained by the city—but that the city not provide services—rather, any service provider could contract to use the fiber on a non-discriminatory, “open access” basis. The project is motivated by the city's desire to spread the economic, social, and other benefits of broadband to all citizens and businesses—and to compete globally in an increasingly-digital economy.

**For More Information:** <http://www.sfgov.org/site/techconnect>

## **Government Communications**

Minneapolis, MN. The driver for Minneapolis is public safety. That city is negotiating a wifi network that will serve the public as a nice added benefit to its core interest—a robust, public safety broadband network. Minneapolis plans to serve public safety over a licensed frequency and a proprietary interface—resulting in a high level of security for sensitive, public safety, data transfers. The city's focus on public safety is also clear in its business plan. Minneapolis has a payment rather than investment model for its network. The city has guaranteed payments to the network owner/operator, US Internet. The estimated payments are \$2.4 million upon contract signing, and \$1.3 million each year for 10 years. In return, the city receives access to the network for public safety and internal government communications.

**For More Information:**

<http://www.ci.minneapolis.mn.us/wirelessminneapolis/>

Corpus Christi, TX. Corpus Christi represents one of the earliest and largest city-wide wireless broadband projects (it is also one of the few city-wide projects that are already operational). The city initiated this project in 2003 in the course of determining how to improve its meter-reading system—automated meter reading over WiFi was the first application. From there, the project has blossomed to include many other internal city applications as well as a public access component. The network is currently overseen by a nonprofit. Internal city communications are integral to the mission of the network, but that mission is also broader and includes digital inclusion, stimulating competition, and economic development.

**For More Information:** <http://www.cctexas.com/wifi/>

## **Step Four: Develop strategic/business plan**

The strategic, or business, plan is the document that will codify how the jurisdiction will deliver broadband access to its residents.

The plan will have several components, including:

1. **Project mission statement**

The mission statement will define the goals of the project.

2. **Stakeholder group identification**

The jurisdiction needs to identify the stakeholders of the network.

These could include representatives of the business community, public safety officials, private citizen groups, NGOs, universities, etc.

3. **Stakeholder feedback**

The jurisdiction should plan to hold multiple sessions (such as “town hall meetings”) to generate interest in and receive feedback regarding a government-sponsored broadband access project. This feedback will help the jurisdiction understand the level of interest/demand exists. Session feedback should be collected and presented as part of the business plan. That way, stakeholder groups are more directly involved and influential in the process.

4. **Asset inventory**

A jurisdiction needs to know what assets it brings to the project. These can include information about potential rights of way negotiation, existing infrastructure (poles, towers, fiber, etc), IT/telecommunications skills on staff, local businesses that can help with any part of the process, etc.

5. **Requirements**

As with any project, knowing the jurisdiction’s business requirements

is essential. The requirements will tie back to the goals identified in Step One. The more specific and measurable these are, the better able the jurisdiction will be to verify that they were met. Technical requirements should also be identified, to the extent that they speak to the project goals.

**6. Risk assessment**

The jurisdiction needs to determine what risks may derail the project. These might include onerous procurement rules, lack of legislative support, lack of interest, contentious relationships with telecommunications incumbents, pending litigation, and so forth.

**Step Five: Seek legislative buy-in**

It is vital to get legislative support for the project at this stage. Although it will not yet be known exactly how the project will happen or how much it will cost, having buy-in up front will make things easier later on. Assuming the jurisdiction has done a good job of identifying and engaging stakeholders, and also assuming that there is general interest in and support of the idea, it should be fairly straightforward to get the legislature to agree to the next steps of the project.

**Step Six: Issue RFI**

Once a solid business plan has been developed and support has been secured, the jurisdiction would best be served by issuing a Request For Information (RFI), or a Request For Expressions of Interest. The RFI should seek to discover how much it would cost to put the plan into effect, and can also provide a “reality check” for any assumptions. Issuing a Request For Proposals (RFP) at this stage would be premature, as the jurisdiction is not yet certain that it will actually execute the project.

The RFI should be issued to any vendors that may be able to work on part or the entire eventual project. The resulting responses should be tabulated and shared with all stakeholder groups as well as the legislature. After the RFI has been responded to, the jurisdiction needs to decide whether it is attractive to go through with the project. If so, a Request For Proposals can be the next step.

**Other Resources:**

Intel and MRI developed a white paper called “The Dollars and Sense of Government-Led Wireless Internet”. It provides a brief overview of some reasons why municipal WiFi can work and may be beneficial for communities. You can get a copy here:  
[http://www.muniwireless.com/reports/docs/Intel\\_dollars\\_and\\_sense\\_of\\_government.pdf](http://www.muniwireless.com/reports/docs/Intel_dollars_and_sense_of_government.pdf).

Civitium, a consulting firm specializing in helping municipalities envision and deploy wireless technologies, has put together a white paper on best practices for writing RFPs for municipal broadband networks. You can get a copy here:

<http://www.civitium.com/CivitiumRFPBestPractices.pdf>. The paper includes a list of links to other resources including RFPs that have been issued by a number of communities.

The Computer and Communications Industry Association commissioned a study to look at the proper role of government as it relates to “the provision of goods and services in a digital economy”. The analysis was performed by Dr. Joseph Stiglitz of the Brookings Institution, Dr. Peter Orszag of the University of California, Berkeley and Jonathan Orszag of Sebago Associates, Inc. In their analysis, the authors developed a set of principles or guidelines for governments to follow. **Appendix I** of this report lists those guidelines; the full report can be found at:

<http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN002055.pdf>.

The City of Alexandria has embarked on a free wireless project in parts of its downtown area. A description of the project plus details on how it was financed can be found in **Appendix J** of this report.

## **Appendix I:**

### **Principles for Government Provision of Goods and Services in a Digital Economy<sup>20</sup>**

The principles include:

#### **"Green Light" for On-Line and Informational Government Activity**

- Principle 1: Providing public data and information is a proper governmental role.
- Principle 2: Improving the efficiency with which governmental services are provided is a proper governmental role.
- Principle 3: The support of basic research is a proper governmental role.

#### **"Yellow Light" for On-Line and Informational Government Activity**

- Principle 4: The government should exercise caution in adding specialized value to public data and information.
- Principle 5: The government should only provide private goods, even if private-sector firms are not providing them, under limited circumstances.
- Principle 6: The government should only provide a service on-line if private provision with regulation or appropriate taxation would not be more efficient.
- Principle 7: The government should ensure that mechanisms exist to protect privacy, security, and consumer protection on-line.
- Principle 8: The government should promote network externalities only with great deliberation and care.
- Principle 9: The government should be allowed to maintain proprietary information or exercise rights under patents and/or copyrights only under special conditions (including national security).

#### **"Red Light" for On-Line and Informational Government Activity**

- Principle 10: The government should exercise substantial caution in entering markets in which private-sector firms are active.
- Principle 11: The government (including governmental corporations) should generally not aim to maximize net revenues or take actions that would reduce competition.
- Principle 12: The government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected.

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<sup>20</sup> Excerpted from Stiglitz, 51-52.



## **Appendix J:**

### **Wireless Alexandria**

#### **Phase I**

The City's "Wireless Alexandria" service, which went live in April 2005, allows any user with a wireless device to access the Internet at no charge. The service was the Washington, DC, region's first free, outdoor, wireless Internet zone, and still one of very few of its kind in the United States. The current outdoor coverage area is centered along the main downtown corridor and includes outdoor dining, Market Square, and the City Marina and Potomac River waterfront. Depending on building locations and other conditions, coverage is available for some distance around that corridor in each direction. Wireless Alexandria is also available at all Alexandria public libraries.

The goals of the Wireless Alexandria pilot project were to provide a convenient public service to users, stimulate economic development and tourism by drawing people to Alexandria, promote the image of Alexandria as a high-tech community, and test the feasibility of using wireless devices for municipal operations. This "win-win" situation gave the government the rare opportunity to let the public use the same equipment City staff tested for municipal use. The pilot service was optimized for outdoor use and uses 802.11b/g mesh routers. Although some indoor users may be able to connect to the system, the service is not intended to compete with commercially available Internet service and should not replace existing home or business Internet access. The pilot project was narrowly tailored to serve a unique outdoor area of the City, and has virtually no impact on commercial Internet service providers.

#### **Phase II**

At the conclusion of the pilot project in mid-2006, staff determined that a citywide wireless network would benefit the government as well as residents, businesses, and visitors. Such a network would aid municipal operations and regional collaboration by making the City's Institutional Network available to workstations and devices in the field. This would primarily benefit public safety personnel, public transit providers, field inspectors, and public works crews, by providing real-time access to existing City data, voice, and video services. After researching municipal wireless projects in other cities, staff recommended that the City pursue a model in which the government minimizes its cost and risk, and refrains from competing against the private sector.

In late 2006, following an extensive and competitive bidding and negotiation process, City Council awarded a franchise to EarthLink, Inc., to build and operate a citywide wireless network. Under the agreement, EarthLink will build and maintain the network at the company's own expense, with no taxpayer funding or

City financial involvement. To recoup its investment, EarthLink will sell wireless services to homes and businesses, using small, polemounted devices throughout the City. In exchange for the right to mount equipment on public property, EarthLink will provide a variety of public benefits, estimated to be worth more than \$13 million over the eight-year term of the franchise agreement.

Although other cities have experimented with wireless hotspots and limited coverage areas, Alexandria will be one of relatively few jurisdictions with complete wireless coverage. Among the localities that do have citywide networks, many involve taxpayer funding, unpredictable advertising revenue, or limited community benefits. Alexandria's innovative network model, in which the public receives significant benefits without any government funding, is believed to be the first of its kind in Virginia and the Washington, D.C. region, and among the first in the nation.

The availability of wireless Internet will also benefit consumers, by stimulating additional price and service competition in the market. Still, the project is not a joint venture or partnership, the franchise is not exclusive, and the City government is not a service provider. EarthLink will operate an open network, meaning that other providers may purchase wholesale accounts to resell to their customers.

In addition to an estimated \$2.7 million savings to taxpayers over the cost of a government-funded network for municipal applications, the franchise agreement includes the following:

**Accounts for Government Use** — EarthLink will provide free and discounted wireless Internet accounts for use by City field workers such as Code Enforcement inspectors and housing inspectors, as well as accounts for “smart” devices such as traffic cameras and parking meters.

**Accounts for Student Use** — EarthLink will provide free access to 2,700 laptops currently issued to Alexandria City Public Schools (ACPS) ninth grade center and high school students, in order for them to access the Schools' existing network 24 hours per day. This will give home Internet access to students who may not otherwise have such access, and will allow students to access other ACPS network resources such as homework dropboxes and printers. ACPS will continue to filter student Internet access, to reduce the availability of inappropriate content.

**Digital Inclusion Accounts** — EarthLink will offer a fixed price of \$9.95 per month, for the term of the franchise, to up to 2,700 low-income residents (approximately four percent of Alexandria households). This represents a discount of more than half off EarthLink's current projected retail rate. Eligible residents will be qualified under guidelines to be determined by the City, and the City may partner with



community non-profit organizations to assist in distributing these accounts and providing low-cost computers and computer training to complement the Internet access.

**Free Public Internet Access Areas** — EarthLink will provide free public Internet access in approximately two dozen locations, which are expected to include the entire Potomac River waterfront and adjacent parks, the King Street corridor from Callahan Drive to the waterfront, the Mt. Vernon Avenue corridor between Hume Avenue and E. Braddock Road, and all Alexandria Metrorail, Amtrak, and VRE stations. The additional areas will consist of major parks located throughout the City, and Landmark Mall.

**Fees and Rent** — EarthLink will pay the City an annual share of its retail access revenues, and a monthly rental fee for each City-owned pole or building rooftop used.

Construction of the network is expected to be completed in June 2007. Detailed information is available at [www.wirelessalexandria.com](http://www.wirelessalexandria.com).